

UNIT 1 DAY 3

Section 1.2 & 1.3

Order and Absolute Value

PROPERTIES OF ORDER

For all real numbers a , b , and c :

TRICHOMY PROPERTY

either $a < b$, or $a > b$, or $a = b$

TRANSITIVE PROPERTY

If $a < b$ and $b < c$, then $a < c$.

ADDITION PROPERTY

If $a < b$, then $a + c < b + c$.

MULTIPLICATION PROPERTY

If $a < b$, and if $c > 0$, then $ac < bc$.

If $a < b$, and if $c < 0$, then $ac > bc$.

ABSOLUTE VALUE

For all real numbers a , $|a| = \begin{cases} a & \text{if } a \geq 0 \\ -a & \text{if } a < 0. \end{cases}$

PROPERTIES OF ABSOLUTE VALUE

$$|a| \geq 0$$

$$|-a| = |a|$$

$$|a| \cdot |b| = |ab|$$

$$\left| \frac{a}{b} \right| = \frac{|a|}{|b|} \quad (b \neq 0)$$

$$|a + b| \leq |a| + |b| \quad \text{(called the triangle inequality)}$$

(called the triangle inequality)

Write each expression without absolute value bars.

1) $|\overset{+}{-\sqrt{3}+2}|$

$\sqrt{1}=1$
 $\sqrt{3}=1.7...$
 $\pi=2$
 $-\sqrt{3}+2$

2) $|\overset{-}{-\sqrt{3}+1}|$
 $-(-\sqrt{3}+1)$
 $\sqrt{3}-1$

3) $|\overset{-}{-\sqrt{3}-2}|$
 $-(-\sqrt{3}-2)$
 $\sqrt{3}+2$

4) $|\overset{-}{2-\pi}| =$
 $-(2-\pi)$
 $-2+\pi$
 $\pi-2$

5) $|\overset{-}{x-4}|$ if $x < 4$
 $-(x-4)$
 $-x+4 = 4-x$

6) $|\overset{-}{\pi-4}|$
 $-(\pi-4)$
 $4-\pi$

8) $|p^2+10| =$
 p^2+10

9) $|-3-\pi|+7 =$
 $-(-3-\pi)+7$
 $3+\pi+7$
 $10+\pi$

10) $|\sqrt{12}+2| =$
 $\sqrt{12}+2$

Use the concepts of this section to determine what signs on the values of x and y would make the statement true.

1) $xy < 0$

$(x < 0 \text{ AND } y > 0)$

OR

$(x > 0 \text{ AND } y < 0)$

2) $\frac{x}{y^2} < 0$

~~$x < 0$~~

$x = -4 \quad y = -4$

$\frac{-4}{(-4)^2} < 0$

HOMEWORK

UNIT 1 DAY 3

p. 23-4: 29-48, 60-64